

dichin gives his solar observations for last autumn, together with a discussion on the formation of prominences.—Tacchini gives his observations on solar spots for May 1874.

*Astronomische Nachrichten*, No. 1,997.—This number contains an account of the observations of the minor planet Virginia since its discovery in 1857, and the following elements are calculated:—

1874, June 19, Berlin.

M =  $322^{\circ} 19' 49''.80$   
 $\pi = 10^{\circ} 0' 42''.76$   
 $\Omega = 173^{\circ} 27' 39''.0$   
 $i = 2^{\circ} 47' 53''.5$   
 $\phi = 16^{\circ} 37' 4''.3$   
 $\mu = 822'' \cdot 710835$   
 Log.  $a = 0.4231729$

An ephemeris is also added for the opposition this summer.—Doberck contributes new elements for Comet I., 1824, deduced from Riimker and Sir J. Brisbane's observations.—Some observations of position of Henry's Comet, 1873, are given by J. J. Plummer.—No. 1,998 contains a paper on the photographic processes applicable to the transit of Venus.—C. S. Sellack contributes a paper on the direct photography of the solar protuberance.—A communication on the elements of the orbit of Alceste is made by A. Hall, corrected by observations made at Washington.—M. Flammarion gives the following periods of double stars:—

	Years.	Apparent semi-axis major.	Perihelion passage.
$\xi$ Ursa Majoris . . .	60.60	2.45	1873.40 at $358^{\circ}$
$\zeta$ Hercules . . .	34.57	1.19	1864.35 at $298^{\circ}$
$\eta$ Corona Bos . . .	40.17	0.865	1853.95 at $287^{\circ}$
$\gamma$ Virginis . . .	175.	3.385	1836.45 at $320^{\circ}$

No. 1,999.—This number contains an ephemeris of the five inner satellites of Saturn from June 1 to Oct. 28, by A. Marth, and a discussion of the various theories of comets, by W. Zenker.—In No. 2,000 is an account of some spectroscopic observations on certain variable and other stars, by H. C. Vogel; the author gives the wave-lengths of the lines in some cases.—G. Strasser gives a number of observations on comets (Winnecke and Coggia), together with the list of comparison stars.—C. H. F. Peters contributes observations on some of the planetoids, and A. Krüger gives some position observations of Coggia's comet.

*Justus Liebig's Annalen der Chemie und Pharmacie*, Band 172, Heft 1. This number contains the following papers:—A condensation product of glyoxal, by Hugo Schiff. Glyoxal is dissolved in five or six volumes of strong acetic acid and a stream of hydrochloric acid gas passed through the solution for about fifteen minutes. The solution on standing deposits a white substance, which was found to possess the composition  $C_{12}H_{14}O_{13} = 6C_2H_2O_2 + H_2O$ , and which the author proposes to name *hexaglyoxal hydrate*. Treated with acetic anhydride, one atom of hydrogen is replaced by acetyl, giving the compound  $C_{12}H_{13}(C_2H_3O)O_{13}$ ; similarly with benzoyl chloride the compound  $C_{12}H_{13}(C_7H_5O)O_{13}$  is produced. The author concludes from these reactions that the substance contains *one* semi-molecule of hydroxyl.—Improved air-bath for heating sealed tubes, by J. Habermann.—On the oxidation products of amylum and paramylum with bromine, water, and oxide of silver, by the same. Amylum yields dextronic or glucosic acid  $C_6H_{12}O_7$ , and paramylum the same. The calcium, barium, and cadmium salts of the acids were examined.—On the sodium contained in the ashes of plants, by G. Bunge. The author is of opinion that the result obtained by Peligot, who found that the ash of beans was free from sodium, is due to some error in the method of determination employed. An examination of the analytical method employed by Peligot has been undertaken, the results of the analysis of the ash of cows' milk being given as an example. This examination leads the author to the conclusion that by determining the alkalies merely in the aqueous extract of the ash, not only is a low value obtained, but the ratio between the two bases is a false one. Details of the method of analysis adopted are next given, and its application to the ash of beans, clover, meadow grass, apples, and strawberries. The author remarks that by his analyses Peligot's conclusions are not refuted, but at the same time they cannot be considered as established on the grounds of the analyses made by that chemist.—On oxysulphobenzide and a new derivative of this substance, by Dr. J. Anna-

heim. The following substances are described in this paper:—Oxysulphobenzide,  $(C_6H_4HO \{ SO_2 \})$ ; Phenoltrisulphonic acid,

$C_6H_3SO_3H$ ; Tetrachloroxysulphobenzide,  $C_6H_2Cl_2OH \{ SO_2, (SO_3H)_2 \}$  and the corresponding bromine and iodine compounds; methyloxysulphobenzide,  $C_6H_4OCH_3 \{ SO_2 \}$ ; the dinitromethyl compound,  $C_6H_3NO_2OCH_3 \{ SO_2 \}$ ; the diamido compound,  $C_6H_3NH_2OCH_3 \{ SO_2 \}$ ; the ethyl compound,  $C_6H_4OC_2H_5 \{ SO_2 \}$ ; the corresponding amyl compound, and their nitro-, amido-, and brominated substitution derivatives.—The concluding paper is by Otto Hecht and Julius Strauss: On normal hexylene and some of its derivatives. The authors have examined the dibromide  $C_6H_{12}Br_2$ , and the monobromide,  $C_6H_{11}Br$ .—A plate illustrating Habermann's paper On an improved air-bath accompanies the present part.

## SOCIETIES AND ACADEMIES

### LONDON

Anthropological Institute, July 1.—Special meeting at the East London Museum, Bethnal Green.—Prof. Busk, F.R.S., president, in the chair.—Col. Lane Fox read a paper on the principles of classification adopted in the arrangement of his anthropological collection exhibited in the East London Museum. The paper contained three divisions, viz. Psychological, Ethnological, and Prehistoric. The author's object had been, during the twenty years he had been occupied in forming the collection, to select the specimens not so much for their rarity or beauty as for their utility in illustrating the succession of ideas by which the minds of men in a primitive condition of culture had progressed from the simple to the complex. Contrary to the usual system of arrangement, which was geographical, and was to be found in most ethnographical museums, the author's primary arrangement had been guided by form, *i.e.* spears, bows, clubs, &c. had been placed by themselves in distinct classes; and within each class there were sub-classes for special localities, and in each of the sub-classes the specimens were arranged according to their affinities. It was shown how far the arts of existing savages might be employed to illustrate the relics of primeval men. In studying the evidence of progress, the phenomena that might be observed were (1) a continuous succession of ideas; (2) the complexity of the ideas in an increasing ratio to the time; (3) the tendency to automatic action upon any given set of ideas in proportion to the length of time during which the ancestors of the individual have exercised their minds in those particular ideas. After a lengthened elaboration of those psychological considerations Col. Fox pointed out that the forms of implements used by savage races, instead of affording evidence of their having been derived from higher and more complex forms, showed evidence of derivation from natural forms, such as might have been employed by man before he had learned the art of modifying them to his own use; and that the persistency of the forms is in proportion to the low state of culture. That conclusion was illustrated by reference to the Australian and other savage peoples. The third and concluding part of the paper was devoted to the correlation of modern implements in use among existing savages with those of Prehistoric times.—The reading of the paper was followed by an explanation of the collection, which was arranged with a view to illustrate the principle of sequence contended for by the author.

### PHILADELPHIA, U.S.

Academy of Natural Sciences, Dec. 23.—Dr. Ruschenberger, president, in the chair.—Prof. Cope made some remarks on fishes from the coal measures at Linton, Ohio. He stated that Prof. Newberry, Director of the Geological Survey of Ohio, had sent to him numerous specimens of fishes and batrachians for determination and description. Among these he had discovered batrachians which were labelled and had been described as fishes (*Pygopleurus scutellatus* Newb.), and fishes (*Conchiopsis* and *Peplorhina* Cope) some of which were labelled "Amphibian or Reptilian." Having determined the latter to be fishes and described them, he called attention to a note of Prof. Newberry on the latter, in which he states (1)

that *Peplorhina anthracina* is a batrachian; (2) that it is identical with *Conchiopsis exanthematicus*; (3) that *C. filiferus* is *Coelacanthus elegans*; (4) that the dentition described by him is not that of *Coelacanthus*; and that (5) the genus is the same as that described by Agassiz forty years ago as *Coelacanthus*. To these propositions Mr. Cope replied that (1) additional evidence derived from two specimens of *Peplorhina anthracina*, recently studied, confirms the view that it is a fish, which evidence is given below; (2) that neither of the two specimens exhibits in its cranial bones the characters of *C. exanthematicus*, though both sides are exhibited. They show, however, that the latter should be referred to the genus *Peplorhina*, since among other points they present the same type of teeth, which I find labelled on one of them "ova?" (3) Mr. Newberry's identification of the species *C. filiferus* with *Coelacanthus elegans* is doubtless correct; but (4 and 5) its reference (with that of similar species) to Agassiz's genus is not warranted until it is found to possess an osseous natatory bladder, and osseous ribs and the type of dentition are discovered in *Coelacanthus granulatus*, the type of the genus. The characters relied on as indicative of the reference of *Peplorhina* to the fishes, are (1) the presence of opercula like those of *Conchiopsis*; (2) the presence of jugular bones, and (3) of oval imbricated scales; (4) the absence of ambulatory limbs. The thin scutiform cranial bones, the dense patch of vomerine teeth, and the mucous ducts of the bones and scales were all ichthyic characters. As no limbs had been discovered in three specimens preserved in the appropriate regions, their nature, if existing, could not be determined at present.—Prof. Cope brought before the Academy some results derived from study of material obtained by him during the preceding summer in the Miocene formations of Colorado. He announced the discovery of the first fossil monkey of the Miocene of America, giving it the name of *Menotherium lemurinum*. He regarded it as allied to the *Tonittherium* of the Bridger Eocene, and as the representative of the more numerous group of the lemuroids, which he had discovered in the latter formation. Size, that of a domestic cat. He stated that his recent discovery of snakes, lizards, and lemurs of forms allied to those previously discovered by Prof. Marsh and himself in the Eocene of Wyoming, constituted points of affinity to the fauna of that period not previously suspected. He also observed that he had discovered some additional species of *Ruminantia* allied to the musk, and to the *Leptomeryx evansii*, which he named *Hypisodus minimus*, and *Hypertragulus calcaratus*, and *H. tricoelatus*. The first was the least of the order, not exceeding a cat-squirrel in size. *Hypertragulus* differs from *Leptomeryx* in the isolation of the first premolar, as in the camels, and in the sectorial character of the penultimate premolar.—On circulatory movement in *Vaucheria*. Prof. Leidy made some remarks on the intracellular circulation of plants, as exemplified in the hairs of the Mullein, the leaf-cells of *Vallisneria*, &c. The moving streams of protoplasm he likened to amoeboid movements, and expressed the opinion that they were of the same character. In the common alga, *Vaucheria*, the filaments of which consist of very long cells, comparable to those of *Nitella* or *Chara*, he had observed an apparent motion of the cell contents, which is somewhat peculiar and, at least, is not generally mentioned by writers. The wall of the cells is invested on the interior with a layer of tenacious protoplasm, containing the thinner liquid cell contents as usual. The parietal protoplasm is closely paved with green granules, and these appear very slowly but incessantly to change their position in relation with one another. The motion is so slow that it was a question for some time whether it did actually occur, but it appears sufficiently obvious if observed in relation with the lines of a micrometer, and its existence was confirmed by several friends whose attention was directed to it.

## PARIS

Academy of Sciences, July 6.—M. Bertrand in the chair.—The following papers were read:—Presentation of a specimen of the photographs of an artificial transit of Venus obtained with the "photographic revolver," by M. J. Janssen.—Researches on solution, crystallisation, precipitation, and dilution, by M. Berthelot. This is a continuation of the author's important researches in thermo-chemistry. The thermal effects accompanying coagulation, the transformation of an amorphous into a crystalline substance, and the mixture of two saline liquids are now treated of. A differential method for measuring the specific heats of dilute solutions has been introduced.—On parasitism and contagion, by M. Ch. Robin.—M. Dumas made some remarks in reply to the foregoing paper.—On the spectrum of

Coggia's comet, a letter from P. Secchi to the perpetual secretary. The author has observed that of the three carbon bands the green is the brightest, while in Tempel's comet the yellow was the brightest, a fact which proves that the gaseous combinations are not rigorously the same for all comets. It was further stated that at the beginning of the month only the band spectrum was visible, but now a general line of connection exists, forming a quasi-continuous spectrum through the centres of the bands. A drawing of the spectrum accompanied the paper.—On the photographic apparatus adopted by the Transit of Venus Commission: reclamation of priority; extract from a letter from Col. Laussedat to M. Dumas.—On the method of employing carbon disulphide in the treatment of vines attacked by *Phylloxera*, by M. Fouque.—In mathematical analysis:—On osculatory surfaces, by W. Spottiswoode.—Note on orthogonal surfaces, by M. E. Catalan, and Reply to the observations of M. Combescure, by M. l'Abbé Aoust.—M. Praznowski presented (through M. Janssen) a note on the helioscope. This instrument is designed by the author for diminishing the brilliancy of the sun's image by polarisation.—On the diffusion of light and the illumination of transparent bodies, by M. J. L. Soret. By examining quartz, amethyst, diamond, and other crystals, the author has concluded that the illumination of non-fluorescent transparent crystalline substances is always due to want of homogeneity.—On the formation of solar spots, by M. Tacchini. The author sees no confirmation of the cyclone theory of sun-spots in the detailed observations of the chromosphere made in Italy, America, and England. Some solar observations for June were also communicated, from which it appears that the sun was in a state of great activity during that month. On the 11th Mg. was reversed all round the sun's limb: on the 4th two double lines (4,924-5,018) were reversed on the western limb, and on the 11th they occupied nearly all that limb and encroached upon the eastern border. A great eruption took place on the 10th, when all the lines from  $\delta$  to 1,474 were seen reversed.—Researches on electric transmission through ligneous bodies, by M. Th. du Moncel. The author's experiments show that wood owes a considerable portion, if not all, its relative conductivity to moisture contained in the pores.—On the embryology of *Rhizocephalus*, by M. A. Giard. These animals constitute a Cirrhipedian group.—On the male accessory glands of some animals and on the physiological rôle of their product, by M. P. Hallez.—On the movement of the stamens of *Sparrmannia africana* L., of *Cistes* and of *Helianthemum*, by M. E. Heckel.—On the existence of diatoms in different geological formations, by M. l'Abbé Castracane.—Carboniferous limestone of the Pyrenees. Marble of Saint-Béat and of Mont (Haute Garonne), by M. F. Garrigou.—A neolithic flute, by E. Piette.—On a scab of the horse of intermittent character caused by an acarus, presenting the singular peculiarity of being psoric during winter, and simply parasitic during summer, by M. Mégnin.—Experimental researches on the action of water injected into the veins, from the point of view of pathology and uremy, by M. Picot.—Analyses of beers and malts, by M. Ch. Ménè.—On the extraordinary hailstorm which fell in the department of Hérault during the night of June 27-28; extract from a letter from M. J. Gay to M. Ch. Sainte-Claire Deville. The loss of vines is stated to be valued at 50,000,000 francs.

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